

R E P O R T R E S U M E S

ED 017 488

TE 000 286

TEACHING SPELLING. WHAT RESEARCH SAYS TO THE TEACHER, NUMBER 3.

BY- HORN, ERNEST

NATIONAL EDUCATION ASSN., WASHINGTON, D.C.

PUB DATE

67

EDRS PRICE MF-\$0.25 HC NOT AVAILABLE FROM EDRS. 35P.

DESCRIPTORS- *ENGLISH INSTRUCTION, *RESEARCH REVIEWS (PUBLICATIONS), *SPELLING, *SPELLING INSTRUCTION, ELEMENTARY GRADES, ENGLISH CURRICULUM, EVALUATION TECHNIQUE, JUNIOR HIGH SCHOOLS, LANGUAGE ARTS, LEARNING EXPERIENCE, REMEDIAL INSTRUCTION, TEACHING METHODS, VERBAL ABILITY,

SPELLING ABILITY IS IMPORTANT EVEN THOUGH SPELLING MAY BE A MINOR SUBJECT IN THE CURRICULUM. THE CHIEF PROBLEMS INVOLVED IN DESIGNING THE SPELLING CURRICULUM ARE DETERMINATION OF OBJECTIVES, SELECTION OF CONTENT, AND ORGANIZATION AND ARRANGEMENT OF CONTENT BY GRADES. SPELLING INSTRUCTION SHOULD CONSUME NOT MORE THAN 75 MINUTES PER WEEK AND SHOULD BE COORDINATED NOT ONLY WITH READING AND COMPOSITION, BUT ALSO WITH SPEECH, HANDWRITING, AND ALL OTHER LANGUAGE ACTIVITIES. RESEARCH HAS SUCCESSFULLY IDENTIFIED THE MOST EFFECTIVE STEPS IN LEARNING TO SPELL AND MANY OF THE UNDERLYING REASONS FOR DIFFICULTY WITH SPELLING. IT IS KNOWN, FOR INSTANCE, THAT WORDS STUDIED IN LISTS ARE LEARNED MORE QUICKLY, REMEMBERED LONGER, AND TRANSFERRED MORE READILY TO NEW CONTEXTS. HOWEVER, THERE IS NO CONCLUSIVE EVIDENCE CONCERNING THE CONTRIBUTION OF PHONICS TO SPELLING. PRIMARILY, THE EVALUATION OF PROGRESS IN SPELLING SHOULD GUIDE AND IMPROVE LEARNING. A SPELLING TEST CORRECTED BY THE STUDENTS WHO UTILIZE ITS RESULTS IS ONE OF THE MOST FRUITFUL SINGLE LEARNING ACTIVITIES. (THIS BOOKLET IS AVAILABLE FROM THE NATIONAL EDUCATION ASSN., 1201 SIXTEENTH ST., N.W., WASHINGTON, D.C. 20036 FOR \$0.25--10 PERCENT DISCOUNT FOR 2-9 COPIES, 20 PERCENT FOR 10 OR MORE.) (RD)

**WHAT RESEARCH SAYS
TO THE TEACHER**

3

ED017488

Teaching Spelling

Ernest Horn

TE000 286

**Department of Classroom Teachers
the National Education Association**

The "What Research Says to the Teacher" Series

is published to provide classroom teachers and prospective teachers with concise, valid, and up-to-date summaries of educational research findings and their implications for teaching.

Each pamphlet in the series is designed to serve two prime functions: to suggest principles and practical procedures that may be applied directly by the classroom teacher and to provide a springboard for further study and use of research findings.

To serve the first purpose, authors of booklets in the series select from each field those research findings that promise to be of most help to the classroom teacher. However, research has not yet provided scientifically valid findings on many aspects of teaching. In such cases, the best that can be offered is expert opinion.

It is impossible, of course, to provide a complete summary of research in any field in 32 pages. To help teachers further explore research findings, selected references are listed at the end of each booklet in the series.

The series was initiated in 1953 by the Department of Classroom Teachers and the American Educational Research Association under the leadership of Frank W. Hubbard, in his capacities as director of the Research Division, secretary-treasurer of the AERA, and assistant executive secretary of the NEA. Beginning in 1966, the Department of Classroom Teachers assumed full responsibility for publication of the series, with the assistance of the NEA Publications Division. One measure of the success of the series is the use of approximately two million copies of the booklets by educators in the United States and throughout the world.

New titles and revisions of existing titles are published each year. See the outside back cover for a list of current booklets.

SIDNEY DORROS, *Series Editor*

Published by

NATIONAL EDUCATION ASSOCIATION
DEPARTMENT OF CLASSROOM TEACHERS

MARGARET STEVENSON
Executive Secretary

CHARLES F. DEUBEL
President 1966-67

Single copy, 25 cents. Quantity orders at the following discounts: 2-9 copies, 10 percent; 10 or more copies, 20 percent. All orders of \$2 or less must be accompanied by funds in payment. The NEA will pay shipping charges on cash orders, but orders not accompanied by cash will be billed with shipping charges added. Address communications and make checks payable to the National Education Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

Copyright© 1954, 1967
National Education Association
Revised 1967

Teaching Spelling

CONTENTS

EXPLANATION	2
THE CURRICULUM IN SPELLING.....	3
The Need for Definite Objectives.....	4
Basic Evidence for the Selection of Words.....	4
How Many Words Should Be Taught?.....	5
Grade Placement of Words.....	6
The Significance of Present and Future Needs.....	8
A Suggested Plan for Grade Arrangement.....	9
EXPERIENCES THAT HELP DEVELOP SPELLING ABILITY.....	10
Learning To Spell Through Reading.....	10
Learning To Spell Through Written Work.....	12
Contributions of Speech and Handwriting.....	13
Contributions of Other Curriculum Areas.....	14
PROBLEMS OF METHOD.....	15
Time Allotments for Spelling.....	16
Context and Meaning.....	16
The Importance of the Corrected Test.....	17
Steps in Learning To Spell.....	19
Creating Interest in Spelling.....	19
The Teacher's Attitude Toward Spelling.....	20
The Use of Spelling Rules.....	21
Phonics in Relation to Spelling.....	22
Providing for Individual Differences.....	24

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION 1

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE
PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION
POSITION OR POLICY.

TE 000 286

PUPILS WHO NEED SPECIAL HELP.....	25
EVALUATION OF PROGRESS IN SPELLING.....	28
Types of Evaluation.....	28
Evaluations Related to Specific Goals.....	29
Observational Techniques	30
SELECTED RESEARCH REFERENCES.....	31
GENERAL REFERENCES ON TEACHING SPELLING.....	32

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY *National Education Assoc.* TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U. S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

EXPLANATION

This booklet is an effort to report to classroom teachers the most important suggestions for the teaching of spelling which have been produced by research. It is not a complete summary of research, but a statement of some of the practical implications of research. The recommendations made in this booklet are those which the author, Ernest Horn, professor emeritus of the State University of Iowa, believes to be soundly supported by research. The original draft of the manuscript in 1954 was reviewed by Guy T. Buswell, University of California (Berkeley); James A. Fitzgerald, Fordham University; and David H. Russell, University of California (Berkeley). Changes were made by the author on the basis of the suggestions of the reviewers and of the staff of the NEA Research Division. This 1967 edition includes a completely new treatment of "Phonics in Relation to Spelling" based on recent research and an updated list of references.

TEACHING SPELLING

SPELLING ABILITY is important even though spelling may be a minor subject in the curriculum. Spelling errors detract from the effectiveness of any written work. They are likely to bring penalties in compositions and tests written at school, especially in Grades 4 to 12, as well as in college. They may be embarrassing in personal letters and business letters; they may be crucial in letters applying for work. The advantages of good spelling ability and the disadvantages of poor spelling ability amply justify careful, systematic planning for helping pupils learn to spell correctly. This involves (a) the improvement of the curriculum, including the selection of content and its grade arrangement, (b) the choice of efficient methods of teaching, and (c) the use of tests for guiding instruction and appraising its results.

THE CURRICULUM IN SPELLING

The chief problems to be solved in designing the curriculum in spelling are (a) decisions as to objectives, (b) the selection of the content to be learned, and (c) the organization and arrangement of this content by grades. However, the solutions of these problems are inevitably related to problems of method and problems of the measurement of results.

It is important that the program in spelling be broadly conceived. The total curriculum is now commonly defined to include all the experiences which children have at school. The curriculum in spelling includes all experiences which may facilitate or retard the development of spelling ability. How well children learn to spell is affected by what is done in reading, in written work, in handwriting, and in speaking, in addition to what is done in periods devoted specifically to spelling. It is also influenced by school morale, by attitudes of teachers toward spelling, and by the design of the curriculum as a whole. No one of these factors should be disregarded.

The Need for Definite Objectives

The first and most important step in the improvement of the spelling curriculum is to formulate the objectives which are to guide instruction. The statements of objectives should be specific, and they should be realistic in view of what the pupils can be expected to accomplish. If one objective is to help pupils learn to spell the words most frequently written in life outside school, it is necessary to ascertain which of these words are most important and to decide how many of them it is practicable to teach. If it is believed that the words to be studied in a given grade are those most frequently written by children in that grade, it is essential to specify which and how many of these words children should attempt to learn.

Definite decisions must likewise be made on many other matters related to spelling: which rules, if any, should be learned, what dictionary skills should be developed, how much to rely on incidental learning and on direct instruction, what phonic knowledge should be taught, and how much attention should be given to the study of the meaning and derivation of words. Decisions should also be made, at the time each objective is adopted, as to what learning experiences are the best means of accomplishing the objective and how its achievement will be evaluated. All these decisions should be made, as far as possible, on the basis of evidence.

The most commonly accepted single objective for the teaching of spelling is to enable pupils to spell the words they need to write now and in the future. It is clearly impossible for pupils to learn in school all the words which they may at some time have occasion to write. It has been well said that the English language has a well-designed center but no discernible circumference. It is the central words, that is, the words most often needed in writing, that pupils should learn to spell.

Basic Evidence for the Selection of Words

Two types of evidence are of basic importance in selecting words for the spelling curriculum: *first*, the evidence on words most frequently written by adults; and *second*, the evidence on words written by children in various grades in school. Both these

types of evidence are extensive and are dependable for all practical purposes.

It is essential to understand clearly the different functions served by the data on the writing needs of adults and the data on the writing needs of children. The data on the writing needs of adults show which words children should be able to spell when schooling is over. The data on the written vocabularies of children show which words are most often written by children in various grades. Especially significant are the data on the words most frequently written by children outside school. Both types of evidence should be utilized in determining what words children should learn to spell. Their usefulness is not limited to the selection and gradation of words in spelling books; they are perhaps *even more useful* for schools which derive their own lists.

For each word, then, that might reasonably be considered for inclusion in the spelling curriculum, we have evidence, dependable for all practical purposes, regarding its frequency of use in adult writing, its frequency of use in the writing done by children both in and out of school, its frequency in reading done by adults and older children, and its difficulty, grade by grade. Judgments may vary as to the significance of these various types of data, but all judgments should be made on the basis of established facts.

How Many Words Should Be Taught?

There is no one easy answer to the question: How many words should be taught in spelling lessons? Among the factors to be considered are the following: the number of words that can be learned by children at different levels of ability in present time allotments, the value assigned to spelling ability in comparison with abilities in other curriculum areas, the amount of emphasis to be put on auxiliary abilities (e.g., those in phonics and in the use of the dictionary), and what is done in other school activities to develop spelling abilities. Most spelling books contain not more than 4000 words in their basic lists, although additional words may be included in supplementary lessons. In schools which derive their own lists, the number of words is probably smaller.

Earlier spelling books, of the period which many fondly but erroneously regard as the Golden Age of good spelling, contained a very large number of words, many of which were very difficult. But in comparison with modern spelling books, they did not contain as many words which are frequently needed in writing. In one edition of Webster's *Elementary Spelling Book*, the famous blue-backed speller, such words as *sago*, *copal*, and *cyst* are found in the presumably easy early lessons, *mucilaginous*, *fugacity*, and *schismatic* in the later lessons. Such words are not found in modern spelling books, which generally limit their words to those in common use. However, there is some evidence that in schools where the spelling words are chosen in connection with various units, many words taught have little or no use in the writing done outside school by either children or adults.

It is important to realize how little would be gained by teaching a very large number of words. After 2000 words are learned, the returns from teaching each additional 1000 diminish rapidly. Two thousand words with their repetitions make up 95.05 percent of the running words in adult writing; 3000, 96.9 percent; 4000, 97.8 percent; and 10,000, 99.4 percent. These figures throw some doubt on the wisdom of teaching more than 3000 or 4000 words. It is conceivable that in a school where pupils read well and widely, have abundant opportunities to write extensively on matters of real concern to them, proofread their written work with care, have formed the habit of using the dictionary, and have developed considerable phonetic ability, the spelling list could well be reduced to not more than 2000 words. These words might be chosen from those of high frequency in child and adult writing that are most persistently misspelled. Easier and less important words could be left to be learned incidentally. But no matter what conclusion is reached as to how extensive the spelling list should be, there remain decisions about the words to be selected and the grades in which they should be learned.

Grade Placement of Words

Among the criteria that have been suggested for determining the appropriateness of words for a given grade are the following: difficulty of spelling; logical principles, including the develop-

ment of phonetic generalizations and the progressive building of derived forms from base words; the importance of words in adult writing; and the frequency of use in the writing of school children.

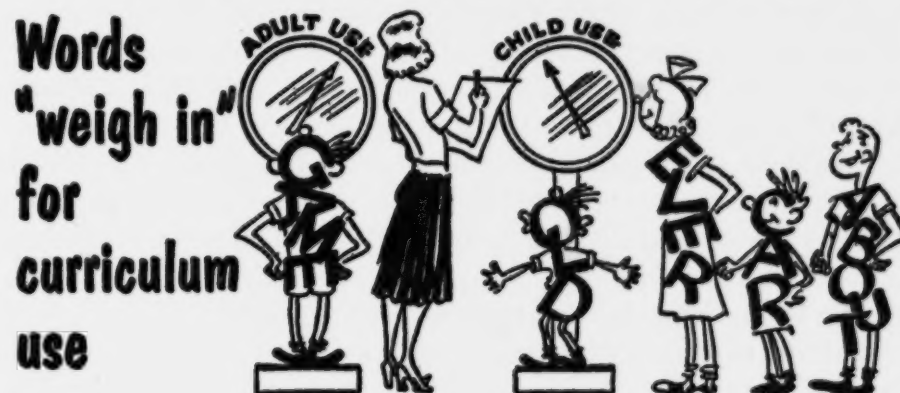
Spelling difficulty was at one time held to be an important principle in determining the grade placement of words. It was thought that easy words should be taught first. This principle of grading conflicts to some extent with that of grading according to the child's present needs. For example, *Halloween* is difficult to spell at all grade levels, but it is written with great frequency by children in all grades in the elementary school. The word *received* is written with high frequency in Grade 3 and beyond, both in the writing done in school and in letters written outside school. The fact that these words are difficult is all the more reason for helping children learn to spell them.

The development of phonic abilities and the ability to build derived forms have had, from time to time, a considerable influence on the choice of words for early lessons. As in the case of the principle of difficulty, these criteria conflict with the principle of children's present needs in writing. While they probably should not determine what words should be taught in a given grade, they may influence the sequence and organization within a grade. There is, of course, the problem of determining when the development of these abilities should begin and the sequence in which they can best be learned.

The importance of words in adult writing influences the choice of words for a grade only as one measure of whether the word should be taught at all. The frequency with which words are written by children in a given grade is now generally regarded as the primary principle for the selection of words for that grade. Since the words are written frequently, instruction helps children to learn and retain the correct spelling. On the other hand, the learning of these important words in the spelling lessons facilitates their use in writing. There is, however, some difference of opinion as to whether words frequently written by children should be taught even though they have little permanent value and whether words that have great importance in adult writing should be taught even though they are infrequently written by children.

The Significance of Present and Future Needs

The significance of the data on the frequency with which words are written by children and by adults is often obscured by such questions as this: Should children learn to spell the words they need now or the words they will need in the future?



This is a perfect example of the *either-or* confusion. It is important to remember that it is impossible to teach all words which children need in their writing, much less all words needed by adults. The spelling lessons in any grade presumably are restricted to words of high importance. Keeping this restriction in mind, it is significant that when the words most often written by adults are compared with those most often written by children, a large overlap is found. For example, most spelling books limit their word lists for Grade 2 to 200 or 300 words. There are many other words than these that have high frequency both in the writing of second-grade children and in the writing of adults. Moreover, the words in this overlapping area also have high frequency in reading and speaking. The word *come*, for example, is among the first 100 words in each of the following areas: the words most frequently written by second-grade children, the words most frequently written by adults, the spoken vocabulary of young children, and the words in general reading.

A feasible plan for determining which words should be taught grade by grade is suggested under the next heading. These suggestions apply to the selection of words not only in spelling books but also in the spelling lessons in schools where no textbook is used.

A Suggested Plan for Grade Arrangement

Most spelling books do not contain a spelling program for Grade 1, yet there are some reasons for giving attention to spelling in this grade. Children do write in Grade 1 and are increasingly encouraged to do so. Appropriate words may be chosen from the words most frequently written by first-grade children.

In Grade 2, choose from among the words of high permanent importance the words most frequently written by children in that grade, regardless of their difficulty. It is especially important that children learn to spell the difficult words that they write frequently. On the other hand, the easy words frequently written by children in this grade should probably also be taught to facilitate free expression.

Next, teach in Grade 3 the words most frequently written by children in that grade that have not been taught in Grade 2. Include as review words those words from Grade 2 which the evidence shows are still difficult for children in Grade 3.

The words for Grades 4 to 6 may be selected by the same general criteria: that is, from among the words of high permanent value that have not been taught in earlier grades, select the words most frequently written by children in these grades and review in each grade words taught in preceding grades that still have marked difficulty.

The words for Grades 7 and 8 may be chosen according to three criteria: *first*, words of permanent value not taught in earlier grades and written with considerable frequency in the seventh and eighth grades; *second*, words taught in earlier grades which are frequently misspelled in Grades 7 and 8; and *third*, (because of the penalties attached to misspellings in adult writing) the difficult words of high frequency in adult writing even though written infrequently by children in these grades.

This plan represents only one way of interpreting the data pertaining to grading the course of study in spelling. Other interpretations may legitimately be made. It is to be expected, however, that any plan for choosing words for the various grades will be adopted only after a critical study of all the evidence.

A radically different plan from that suggested above is found in some schools which do not provide any specific list of words

by grades but limit the study of spelling mainly to words pertaining to various units or activities. From reports of teaching spelling by this plan, the spelling lessons include a great many words that are not likely to be written even in the same year, after the unit has been completed, and which have very little likelihood of ever being written in later years. Another radically different plan has recently been proposed, according to which words would be chosen and the curriculum designed primarily to enable pupils to arrive inductively at phonological understandings. This proposal will be discussed later in more detail under the heading Phonics in Relation to Spelling.

EXPERIENCES THAT HELP DEVELOP SPELLING ABILITY

In the great majority of schools, spelling texts or workbooks are utilized in the teaching of spelling. However, attention has already been called to the fact that the development of spelling ability is not limited to what is done in periods specifically devoted to teaching spelling. It is essential that the work of the spelling period be efficiently coordinated with what is done in other curriculum areas to develop spelling ability. But whether textbooks are used or not, such questions as the following must be answered: What subjects other than spelling help develop spelling ability? How may the contributions from these subjects be best secured without interfering with the primary purposes for which these subjects are taught? How much is contributed by each of these subjects and by all of them combined? Do these contributions need to be supplemented by the systematic teaching of spelling in special periods?

The largest contributions from curriculum areas other than spelling are made by reading and composition, but speech and handwriting are also influential, as indeed are all activities in which language is employed.

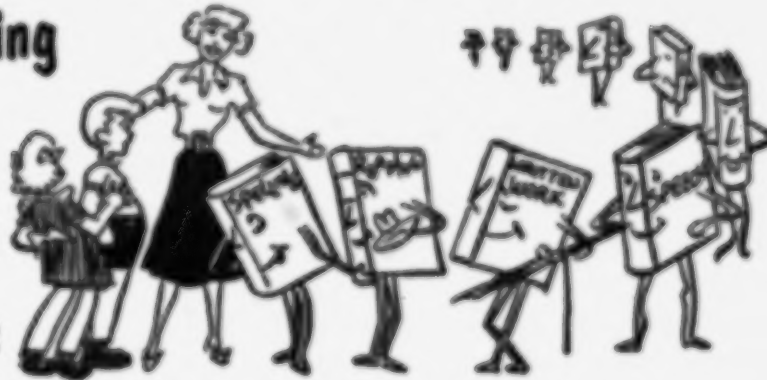
Learning To Spell Through Reading

Spelling and reading abilities are closely related. Correlations which have been reported between spelling and reading are

nearly as high as those which have been reported between intelligence and reading. Few persons who are excellent readers are poor spellers, and few, if any, poor readers are good spellers. However, some students in the middle ranges of ability in reading are excellent at spelling, while others spell very poorly.

That pupils learn to spell many words by reading them has repeatedly been demonstrated. It seems reasonable to expect that the more often a word is seen in reading, the more probable it is that pupils will learn to spell it. Yet among the words repeatedly met in reading are many spelling demons. If abbreviations, proper names, and derived forms not reported by Thorndike are omitted, all but 9 of the 100 words which, according to Fitzgerald, are most frequently misspelled in Grades 2 to 8 are among the 1000 words of highest frequency in reading. It is possible that, because these words are so familiar, little or no attention is called to their spelling in the process of reading.

Spelling has many allies



It has been suggested that when new words are met in reading, the pupils take time to learn to spell them. While a good many words could undoubtedly be learned in this way, many of them would be words not likely to be used by children in their present and future writing. Most of the spelling errors in writing are made on familiar rather than on strange words. This suggestion seems objectionable, moreover, because it is likely to be unfavorable to the development of good reading habits. The pupil's attention will be directed to spelling, of course, in looking up unknown words in the dictionary and in differentiating such words as *quiet* and *quite*, *except* and *accept*, which have similar configurations and sounds but different meanings.

The contributions of reading to spelling, however, are not limited to the words that children learn to spell. Many auxiliary abilities are developed, such as the use of the dictionary, the improvement of pronunciation through oral reading, and the ability to associate letters with sounds. There is some evidence that instruction in phonics is more beneficial to spelling than to reading even though given in connection with the reading program. In reading, however, the emphasis is upon letter-to-sound relationships, and the identification of words is further assisted by configuration and context. In contrast, spelling requires the pupil to decide what letters to use to spell sounds, and, except in the case of purely phonetic words, this a difficult decision to make.

The potential contributions of reading to spelling are substantial. As reading abilities are developed, spelling is improved. On the other hand, deficiencies in reading are serious handicaps in learning to spell.

Learning To Spell Through Written Work

The potential contributions of composition to spelling are great indeed. The writing of letters, bulletins, items for the school newsheet, reports on special problems, and other forms of creative writing constitute important motives for learning to spell and aid in the maintenance of words which the child has learned in his spelling lessons. The more the occasions for writing in school resemble the occasions in which writing is done out of school, the more likely it is that the learning of the most important words will be facilitated.

The statement is sometimes made that the words that children need in their written work are not the words in the spelling list for their grade. This, of course, is partly true, because the number of words in the spelling list is restricted. The lists for each grade presumably include the words most commonly written in that grade, and these words, according to the evidence, are likely to be written with great frequency. Of course, other words will be needed. Many of them, however, will have only transient value. Moreover, the additional words that are needed will vary from pupil to pupil.

In schools which have regular or occasional spelling lessons but do not use a text, the words for the spelling lessons may include words misspelled in written work. And even in schools that base spelling instruction primarily upon a text, words misspelled in written work are sometimes taught either in separate lessons or as a supplement to the regular lessons in the book. When this is done, the chief emphasis should be put on words that are most important in present and future writing. It seems undesirable, moreover, to take the time of the entire class to study words that have been misspelled by only a few.

Policies differ as to how rigorously spelling errors in written work should be corrected. Too much emphasis on correct spelling, especially in the lower grades, may discourage children from writing. In one city where spelling achievement is high throughout the grades, the policy is to encourage children to write extensively, beginning in Grade 1, and to be rather lenient in the emphasis on correct spelling in the primary grades. However, correct spelling is a factor in acceptable written work, and there should be increasing emphasis upon it in intermediate grades and beyond. This implies that there be a definite plan for correcting spelling errors. The evidence indicates that the mere checking of spelling errors does little good unless accompanied by an effective plan for learning the words which have been misspelled. The more pupils accept responsibility for detecting spelling errors and learning the misspelled words, the better. They are ordinarily not very good at proofreading, but the habit can be established and the ability improved through practice.

Contributions of Speech and Handwriting

Shortcomings in speech, such as mispronunciations and articulatory defects, have been found to be related to disabilities in spelling. It is to be expected that the removal of these shortcomings will be reflected in better spelling. In many words, such as *athletic*, *government*, *probably*, and *experiment*, mispronunciations are a major cause of misspelling. Most modern methods of teaching spelling include correct pronunciation as an essential step in learning. An interesting problem is created by regional differences in pronunciations. It seems desirable that classroom

teachers, in pronouncing words in spelling lessons, use the pronunciations characteristic of cultivated speech in the locality in which the school exists. Abundant opportunities for speaking help develop fluency in expression, which is likely to be carried over into written work, with potential benefits to spelling.

Pupils who write legibly and with reasonable speed have an advantage in taking tests in spelling because they can write the words in the time allowed, are not penalized because of illegible letters, and can give their entire attention to spelling without being distracted by handwriting difficulties. Furthermore, poor handwriting is frequently cited among the factors that cause difficulty in spelling. Handwriting is a special problem in teaching spelling in the primary grades. Manuscript writing is taught in Grades 1 and 2 in the great majority of schools, and, although the evidence is somewhat conflicting, it is generally believed to have beneficial results on both reading and spelling.

Contributions of Other Curriculum Areas

It is difficult to estimate accurately the amount of spelling ability that is developed in curriculum areas other than spelling. Some pertinent evidence is provided by the results of experiments on the ability of children to spell words not studied in spelling lessons as compared with *studied* words of equal difficulty, according to spelling scales. In brief, easy *unstudied* words are spelled about as well as easy *studied* words, but as the difficulty of the words increases, the *studied* words are spelled with much higher accuracy. At all levels of difficulty, however, there is clear evidence that considerable learning does take place outside the spelling period.

Much more significant for planning instruction in spelling is the evidence from tests given before words are studied. These are of two types: (a) tests given at the beginning of a term on words to be studied during that term and (b) tests given before the study of the weekly lesson. In some schools a test consisting of words sampled from the words to be taught during the term is given at the beginning of the term. The median percents of accuracy that have been reported range in most instances from about 25 percent to more than 60 percent and are much higher in schools where pupils have developed superior

abilities in reading and composition. It seems reasonable to assume that this range in the percent of accuracy is accounted for chiefly by differences in the effectiveness with which reading, composition, and other language arts, aside from spelling, have been taught in these schools.

Additional evidence is furnished by the results of tests given before the study of weekly lessons, which show that many of the words have already been learned. Some children spell all or most of the words correctly before study, but very poor spellers may misspell all or nearly all of them.

It is evident that children do learn to spell many words in activities outside the spelling class. They also make progress outside the spelling class in using the dictionary, in proofreading, and in associating sounds with letters. There is some evidence to suggest that, when spelling lessons are highly motivated and efficient, pupils develop an interest and conscientiousness in spelling in other curriculum areas. As a result, the contributions to spelling from these other areas are increased.

The fact that children do learn to spell so many words outside the spelling class points to the need for coordinating instruction in spelling periods with the development of spelling ability in other activities. It suggests that motivation will be increased and much time saved if the pupil's efforts are directed to the study of those words he has not yet learned. The words that have not yet been learned can easily be ascertained for each pupil by tests given before study.

Whether it is practicable to teach spelling only in connection with the other language arts is a debated question. The evidence indicates, however, that what is done with spelling in connection with other language arts needs to be supplemented by direct, systematic instruction in spelling periods, especially in the case of pupils of below average spelling ability, and for all pupils in the learning of difficult words.

PROBLEMS OF METHOD

In most schools, spelling is taught in special periods set aside for the purpose and utilizes a spelling book which largely determines the content stressed in these special periods. While this section on method is written with this fact in mind, most of the

suggestions should be helpful to schools that, although using special periods for spelling, do not use a textbook but make their own spelling lists, and even to the few schools that leave spelling largely to incidental learning.

Time Allotments for Spelling

Methods of teaching influence and are influenced by the amount of time allotted to spelling. Time allotments should be kept low whether spelling is taught as a special subject or in special periods in connection with language arts. In most instances the time allotment should not be more than 75 minutes a week, and there is some evidence that with efficient methods, this amount of time could profitably be decreased. Increases in time beyond this amount do not result in comparable increases in achievement, and the value of spelling, in comparison with other subjects, does not justify a larger time allotment than this. There is some evidence that spirited, expeditious work in the spelling period has a favorable influence on learning. Attention is sharpened, dawdling is discouraged, and little opportunity is given for mind wandering.

Context and Meaning

Research has consistently shown that it is more efficient to study words in lists than in context. Words studied in lists are learned more quickly, remembered longer, and transferred more readily to new contexts. Occasional lessons may be justified in which words are presented in context for the purpose of encouraging children to do certain types of writing such as invitations, thank-you notes, and letters to classmates who are ill at home.

When children know the meaning of a word they learn to spell, they are more likely to use it in their writing. But if the words in the list for a given grade are selected from among the words most frequently written by pupils in that grade, there will be few words, if any, whose meanings are not known by the pupils. At least, they will know the meanings of the words they are most likely to use in their own writing. Most spelling books advise that in giving a test on the words in any lesson, each word first be pronounced, then used in a sentence, and finally pronounced

again. The pupils, however, write only the word, not the sentence. The use of the word in a sentence helps pupils identify the word to be spelled. This is especially important in the case of homonyms, words of similar sounds. Moreover, pupils are encouraged to ask the meaning of a word when they are in doubt. In this way association of spelling with meaning is strengthened.

A classroom teacher, because of his knowledge of the abilities of his pupils, usually will know whether any word in the lesson needs to be explained. It is unlikely that teachers of typical second-grade classes will think it necessary to develop the meaning of words like *father* or *play* or that teachers of typical fifth-grade classes will think that their pupils do not understand the meaning of words like *hungry*, *cough*, or *knee*. To teach the meaning of each word, whether it is familiar to the children or not, seems a useless and formal exercise.

**Meaning
adds
power
to
learning**



The Importance of the Corrected Test

The work in most modern spelling books is organized on a weekly plan. The plan includes two or more tests a week. Schools that derive their spelling lists from other units of work, such as those in the social studies, presumably also give tests on these lists. These tests, whenever given, show each child which words he has not yet learned and therefore needs to study. They also show the teacher which children most need help and encouragement.

But the values of these tests are not limited to these two contributions. When corrected by the pupils and the results are properly utilized, the test is the most fruitful single learning ac-

tivity (per unit of time) that has yet been devised. It helps pupils at all levels of spelling ability. Better spellers will learn all or nearly all the words of a lesson through the corrected test alone, and even the poorer spellers will learn many words. Yet, like all learning activities, its efficiency is greatly reduced if the activity is performed in a formal and perfunctory manner.

There are several factors which help make the corrected test a vital rather than a routine experience: *First*, each pupil should understand that the test shows him which words he needs to study, thus affording intelligent motivation. *Second*, he should be convinced that, by working carefully as he corrects his test, he can learn many words in the process of correction. To show pupils that this is true, it has been found helpful, in an early lesson, to give a test, have the pupils correct it, repeat the test immediately, and show each pupil how many words he has learned. The corrected test as a learning exercise should be emphasized throughout the year. *Third*, pupils should correct their own tests as the teacher spells each word aloud. This focuses the attention of the individual pupil on each word he has misspelled, as well as on the correct spelling of the word. To have each pupil correct his own paper is better than to have pupils exchange papers or to have the teacher correct them. However, the teacher will need to recheck papers occasionally to discover whether they have been carefully corrected and to discover pupils who have difficulty in correcting their own work. Much of this can be done informally as he helps individual pupils. *Fourth*, time for the study of words missed on the test should be provided as soon as possible, preferably immediately after the test has been corrected. *Fifth*, the classroom teacher should give immediate help to individual pupils who have made many errors. *Sixth*, the results on the final tests should be compared with those on the first test to show what progress has been made.

When these conditions are met, the corrected test will become not a routine performance, but a vigorous, aggressive attack by each pupil in learning the words he has misspelled. The corrected test is one of the happy instances in which group instruction and adjustments to individual differences are combined. The tests are given and corrected as a group exercise, but individual pupils are concerned only with their own special needs.

Steps in Learning To Spell

An enormous amount of research has been done in the effort to determine the best methods for learning to spell a word. The findings of research are incorporated in a series of steps in learning to spell a word. These steps are pretty much the same in most modern spelling books. They involve pronouncing each word, looking carefully at each part as the word is pronounced, saying the letters in sequence, attempting to recall how the word looks and saying the letters, checking this attempted recall by looking at the correct spelling of the word, writing the word, and comparing the word as written with the correct spelling of the word. These steps are repeated if necessary until the word is correctly spelled.

It will be seen that these steps involve visual, auditory, and kinesthetic imagery as well as an emphasis on recall. Better spellers may not need to follow all these steps habitually, but even the best spellers may find it safer to use them in learning words that cause them special difficulty. Poorer spellers are likely to need special help and encouragement in using all the steps, but they will use them when they discover that the steps really help them learn to spell. The steps which provide for attempts to recall the correct spelling of a word should be strongly emphasized, since they make learning a more active process. Moreover, it is the ability to recall the correct spelling that is needed in writing.

Creating Interest in Spelling

How well a pupil learns to spell depends largely upon his interest. The nature and strength of his interest determine what he will undertake to do, how hard he will work, and how persistent he will be in his efforts.

There are several ways in which a classroom teacher can help pupils develop interest and attitudes that will improve their spelling. First, pupils can be led to appreciate the fact that spelling errors make a poor impression in letters and other written work and are heavily penalized in such types of writing as applications for employment.

Second, pupils should understand that the words in their spelling lessons are those most likely to be needed now and in the future.

Third, the interest of pupils is increased when they learn an efficient method for studying their spelling lessons.

Fourth, pupils should be convinced that they can improve their spelling ability. They need definite evidence that they are making progress. A comparison of the scores on the first and final tests in the week will provide this evidence.

Fifth, children should be helped to assume responsibility for learning to spell. When children cooperate in setting goals in spelling and take responsibility for reaching them, the results are quite different from those attained when the classroom teacher alone sets the goals and takes the chief responsibility for their accomplishment.

Sixth, abundant opportunities should be provided for writing on subjects of interest to the children, thus creating a feeling of need for spelling.

Seventh, pupils should be led to take pride in correct spelling in all written work and to proofread their writing for errors in spelling.

Eighth, individual children are more likely to be interested in a class when there is high morale. Mutual helpfulness is better than competition.

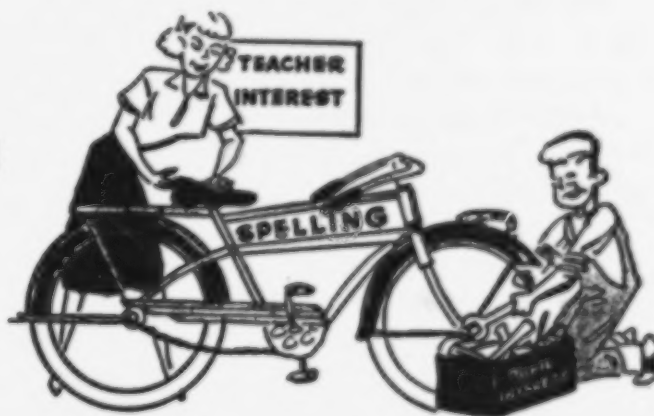
Games, contests, devices, and working for school marks, if used at all, should be thought of as supplementing the more intrinsic appeals listed above rather than as substituting for them.

The Teacher's Attitude Toward Spelling

The teacher's own attitude toward spelling is an important factor in determining his pupils' attitudes and, consequently, how well they learn to spell. Enthusiastic, sympathetic classroom teachers often get good results even when they do not otherwise make use of the most efficient learning procedures. And teachers who use efficient procedures but in a mechanical way, without enthusiasm or sympathetic understanding of the needs of individual pupils, get poor results. There is no reason why enthusiasm, sympathy, and efficiency cannot be combined.

Investigations have shown that spelling is often one of the subjects many classroom teachers dislike to teach. The teacher's own interest in spelling may be increased by understanding the importance of correct spelling, by being assured of the soundness of what he is expected to teach, by knowing that the methods he uses have been proved efficient, and by being convinced, on the basis of the evidence, that all pupils can improve their spelling. But the greatest source of interest will come from helping individual pupils grow in spelling ability, especially pupils who are having marked difficulties in learning to spell.

**Interest
determines
pupil
progress**



The Use of Spelling Rules

A large number of the words written by adults and children contain suffixes added to English base words. Words with suffixes tend to give children more difficulty than the base words from which they are derived. Most persons who have investigated the effect of rules believe that the teaching of certain rules is beneficial but advise that the only rules that should be taught are those applying to a large number of words and having few exceptions. The rules that meet these requirements are the rules for dropping final silent *e*, for changing *y* to *i*, for doubling the final consonant, for spelling words with *qu*, for capitalizing proper nouns and adjectives, for using a period after an abbreviation, and for using an apostrophe in a possessive or a contraction. These rules should be developed inductively, beginning in the early grades by calling attention to the building of new words by adding such common suffixes as *ing* and *ed*. When a rule has been learned, it should be reviewed and regularly applied.

Phonics in Relation to Spelling

Most of the early research on teaching phonics was planned to discover its effect on reading. Recently there has been a growing interest in the possibility that teaching sound-to-letter relationships might contribute to the improvement of spelling ability. Some strong claims have been made of the contributions of phonics to spelling. The fact is that we do not have adequate evidence for making a confident decision as to how much and in what way the teaching of phonics can increase the efficiency of spelling instruction.

The most extensive investigations (Research References 6, 8) have dealt with the ways in which various sounds (more accurately, *phonemes*) are spelled in common words. These two investigations agree substantially on the number of ways in which the various phonemes are spelled and on the relative regularity of the various spellings of the sounds.

The reports of the two investigations differ, however, not only in design but also in the meaning attached to the term *regular* and as to the significance of the data for the improvement of spelling ability. In the early study (8) the term *regular* means simply the total number of ways in which the sounds are spelled irrespective of the word position or other phonological or morphological factors. The article reporting this investigation points out, however, that there are some phonological and other rules which, if learned and applied, may help pupils to determine how the sounds of a given word should be spelled and suggests criteria for selecting and utilizing these rules.

The term *regularity* has a different meaning in the more recent and elaborate investigation (6). In that investigation the research staff, using a computer, reported that by giving full pronunciation to the syllables as indicated in the dictionary chosen as standard, by taking into consideration the phonological factors of stress and environmental conditions in words and syllables, by such morphological factors as compounding and affixation, and by the use of approximately 300 specialized rules, the percentages of the consistencies of phoneme-grapheme relationships were greatly increased.

This investigation provides the most complete and useful source of information available on phoneme-grapheme relation-

ships in formal speech. The forthright and complete detail in which the procedures and results of the investigation are presented in the voluminous report should be a challenge to considerable debate on the design of the research and on the implications drawn for instruction, as well as, hopefully, a stimulus to further research.

In the evaluation of the claims for high regularity in phoneme-grapheme relations, two limitations should be kept in mind: first, the pronunciations chosen for analyses are those given in *Webster's New International Dictionary*, second edition. These pronunciations, according to the dictionary, are those found in deliberate and careful speech, elsewhere called formal speech. In many words these pronunciations vary from those found in informal cultivated speech. Second, the degree of regularity obtained by sophisticated research workers with several hundred rules to guide them and the use of a computer seems far removed from what can be achieved by students with the abilities they have or can be given.

In view of the high regularities found in this investigation, the authors propose that beginning in the earliest grades, the words should be chosen and the curriculum designed primarily to enable children to develop understandings of phonological principles. Whether this is desirable or practicable can only be determined by extensive, long-term research. Among the questions for which additional data are needed are the following: To what degree do the regularities reported for formal speech occur in informal speech and in the many words that have more than one accepted pronunciation? Is it feasible or desirable for children to learn the full range of phonological generalizations? If not, which generalizations cover enough cases with few exceptions to justify teaching them? Which words cannot be spelled correctly by using phonological and morphological principles? The authors state that the rule should not be memorized but developed inductively. Should the inductive procedures stop short of stating the rules? What clues in applying phonological rules can be found by investigating children's errors in spelling? Which rules can safely be left to be discovered by the children themselves without specific instruction?

Nothing that is said above should be understood to suggest that instruction in phonological principles has no contribution to make to spelling. The evidence consistently shows that students benefit from some kind and amount of instruction in phonics, even when it is given in reading. It is meant as a warning that much of the evidence needed to make intelligent decisions has not yet been produced.

Modern spelling books place considerable emphasis on developing a knowledge of sound-to-letter relationships. As was pointed out earlier, one important step in learning to spell a word is to pronounce it carefully, noting how each sound is spelled. This in itself should and does increase the pupils' knowledge of sound-to-letter relationships, but it is not the same as explicit, systematic instruction on phonological generalizations. In addition, most books have provided for the inductive development of such rules as apply to a large number of words with few exceptions. Whether children need more or different emphases on phoneme-grapheme relations can be decided only by research. When adequate, dependable evidence is available, it is possible that more or different emphases on phonological generalizations will be regarded as essential.

Providing for Individual Differences

There is a wide range of spelling achievement in any grade. Some children in Grade 6, for example, may spell as well as the average pupil in Grade 9, and some, no better than the average pupil in Grade 3. In general, one-fourth of the children in any grade where spelling is taught spell as well as the average child in the grade above, and one-fourth, no better than the average child in the grade below. Pupils vary also in all the factors that influence spelling ability: in motivation, in intelligence, in reading ability, in the amount and nature of their written work, in handwriting, in methods of work, and in home backgrounds. For making adjustments to the needs of individual pupils, there is no substitute for the competent, resourceful classroom teacher.

The most practicable plan for meeting these differences is a combination of group teaching and help given by the teacher to individual pupils who are having special difficulties. A test given

before the study of any lesson will show each child which words he needs to study. It also shows the teacher which pupils need individual help and encouragement.

The class or group as a whole should deal only with matters of common concern. It is inefficient to take the time of the whole class to meet the needs of only a few.

Some schools have followed the practice of making out two tests of equal difficulty, sampled from the words to be taught in the term. One test is given near the beginning of the term and the other at the end. Children who spell most of the words correctly on the test at the beginning of the term are excused from the regular spelling class with the provision that, working in pairs, they learn all the words for the term. This can usually be done in two or three weeks in the time regularly provided for the spelling period. These children then utilize the time of the spelling class for other activities of interest to them. This plan has much to recommend it, but it does require considerable supervision, and most teachers may prefer to keep superior spellers in the regular class, especially since these pupils, in their daily and weekly work, study only those words which the test taken before study shows they cannot spell.

PUPILS WHO NEED SPECIAL HELP

It is of the utmost importance that pupils whose spelling achievement is low be given help as soon as possible lest they become discouraged by repeated failures, form poor habits of work, and develop bad attitudes toward spelling. But before any effectual help can be given, it is necessary to discover the source of their difficulties. Poor achievement may be due to low intelligence, to physical defects such as deafness, to poor health, to hampering traits of personality, or to factors related to inadequate educational experiences.

Pupils who have low intelligence are rarely good spellers. Some pupils of average and above average intelligence also have trouble with spelling. Physical disabilities should, of course, be corrected as far as possible, and they can be alleviated to some extent by skillful adaptation of methods to individual needs. For example, children who are hard of hearing can be seated near the teacher.

Except in the case of children who are low in intelligence and those having severe physical handicaps, the factors most frequently associated with low achievement in spelling are educational: lack of motivation, low reading ability, defective speech, slow or illegible handwriting, and disabling traits of personality. Fortunately, all these shortcomings can be removed or at least alleviated by instruction.

Children who have little interest in spelling are not likely to succeed in it. The most important ways of creating interest in spelling have been discussed above. It is especially important that even small improvements by poor spellers should be noted and praised.

There are a few pupils in most classes who are severely handicapped in learning to spell because of low reading ability. Some are unable to read the words in their lessons, much less to spell them. They find even greater difficulty in reading the directions for exercises in their workbooks. Moreover, their inability to read well means that they will not read extensively and so will learn fewer words through reading. It is futile to expect such pupils to do satisfactory work in spelling unless their reading can be improved. Individual help in reading their spelling lessons will improve both their spelling and their reading.

Children who have little ability to associate letters with sounds are obviously handicapped in learning to spell. A few children, even with the word before them, cannot tell which letters spell the successive sounds. In extreme instances the lack of phonic knowledge is completely frustrating. Typical of the attempts of one fifth-grade boy, for example, was his writing *arpe* for *weigh*, *esnut* for *receive*, and *elunst* for *running*. As he received individual help in learning sound-to-letter relationships, his spelling steadily improved.

Perhaps the most frequent cause of poor spelling achievement is poor study habits, including lack of aggressive attack and lack of efficient procedures. When a pupil is having difficulty in learning to spell, one of the first things to do is to have him explain how he proceeds in learning to spell a word.

Some children may show no deficiencies in tests of auditory acuity and yet may not be able to hear or repeat correctly the sounds in words. Both group and individual practice should be

given to develop the ability to hear and say sounds accurately—not only single sounds but the sequence of sounds. One important step in learning a word, as recommended in modern spelling books, is careful pronunciation while noticing how each sound is spelled.

Children who cannot write the words in their tests in a reasonable time allowed for the class as a whole are deprived of the benefits of the corrected test. Such children must be helped to write more rapidly. In some instances, however, slowness in writing a word may be due to hesitation in deciding how to spell it. Illegible letters constitute another problem, especially the vowels, since the vowel sound is spelled in different ways in different words. For example, *a* may be written so that it cannot be distinguished from *o* or *u*, so that neither the pupil nor the classroom teacher can tell which letter he meant to use. An inspection of the written tests will show the kind of help each pupil should receive.

Low achievement in spelling may be due to more general causes which affect most of the work that a pupil does in school. He may be lazy, dislike school, or be antagonistic toward the teacher. He may be generally negligent and careless regarding details. He may not have learned to work persistently in the face of difficulty. He may feel rejected by his classmates or disturbed by conditions in his home. Any improvement in these general conditions is likely to be reflected in improvement in his spelling. On the other hand, if, through sympathetic assistance, he is helped to succeed in spelling, this success may help remove these unfavorable influences.

Pupils who are discouraged because of lack of achievement in spelling are often given a marked lift through the sympathetic interest and assistance of their classmates. In one large elementary school in which spelling achievement had long been low, marked improvement was made when the children adopted the motto, "All for one and one for all." The better spellers, with suggestions from the classroom teacher, helped and encouraged the weaker ones. Pupils developed pride in the achievement of their class as well as in their own achievement.

It is important to discover, as early as possible, pupils who are doing poor work in spelling, to diagnose their difficulties,

and to give them help. They should be dealt with, with patience and sympathetic understanding. Great harm may be done both to the child's development in spelling and to his personality by holding him to standards of performance which, because of his disabilities, he cannot meet. Some of these disabilities, such as those in reading, take considerable time to remove. But they must be removed, or at least diminished, if the pupil is not to be handicapped in learning to spell.

EVALUATION OF PROGRESS IN SPELLING

Achievement in spelling cannot safely be taken for granted. Whatever goals have been set up to guide instruction, whether the learning of the most useful words, the ability to use the dictionary, the knowledge of rules, the ability to correctly associate letters with sounds, or the ability to proofread written work, it is essential that both classroom teachers and pupils know the degree to which their goals have been reached. This is true of short-range goals, as for the day or week, as well as goals for the term and year. Achievement must be measured, moreover, regardless of the general pattern of the curriculum, whether it is a subject curriculum, an activity curriculum, a core curriculum, or a broad-field curriculum.

Types of Evaluation

There are several types of evaluation, each serving a somewhat different purpose: the spelling section of a battery of standardized achievement tests, tests which guide and measure achievement in daily or weekly lessons, tests which measure progress for the term or year, and observational techniques. However, the primary purpose of all of them should be to guide and improve learning.

There are several cautions which should be strongly emphasized in interpreting the scores made on a standardized test in spelling. First, the scores made by children on a standardized test in spelling reflect only in part the effectiveness of what is done in the spelling class. Other curriculum areas, as has been pointed out, make important contributions to the development of spelling ability. Low achievement in spelling is usually associated with low achievement in other language abilities.

Second, the abilities measured by a standardized test may not be closely related to the specific goals set up to guide instruction. Suppose, for example, one goal has been to learn to spell a given list of words, whether a list in a spelling book or a list derived from the written work. The achievement of this goal cannot be measured by a test which does not contain these words. Both classroom teachers and pupils are confused and disheartened when low or mediocre scores on a standardized test are assumed to measure the effectiveness with which they have worked in the spelling class.

Third, the scores made on a standardized test by the pupils of a given class should not be taken as a measure of the competence of the teacher of that class. These scores reflect the accumulation of all educational experiences pertaining to spelling that the pupil has had, both in and out of school, up to the time the test is given. For example, if a fifth-grade class has recently acquired an excellent teacher of spelling, we should expect his competence to be underestimated by the scores made by his pupils on a standardized test. His skill in teaching would be shown better by a test at the beginning of the term or year on the words to be learned in the spelling class and a test of equal difficulty at the end of the term or year to show what progress his pupils have made.

Fourth, the pupils' scores from which the standards are established are widely distributed above and below the average, and it is therefore to be expected that the scores of a given grade or class will also cover a wide range.

Evaluations Related to Specific Goals

The evaluations which most helpfully influence learning are those used to guide the pupils' efforts from day to day. In comparison with standardized tests, their purposes are more easily understood by both pupils and classroom teachers, and they are more closely related to the specific goals which have been set up to guide instruction. Such are the tests given before the study of a lesson to show each pupil what he needs to learn and the tests given after the period of learning to show the results of his efforts. Included also are tests given near the beginning of a term on the words to be studied during the term and tests given at the

end of the term to show what progress has been made. How these various tests are used has been discussed earlier in considerable detail. However, if the goals set up to guide instruction represent inadequately the abilities required in spelling, the measurement of the achievement of these goals shows only the degree to which these inadequate goals were achieved, rather than what should have been accomplished.

Observational Techniques

While pencil-and-paper tests are essential, they must be supplemented by other types of evaluation, including observational techniques. For example, one can determine by pencil-and-paper tests that the pupil knows how to use the dictionary, but not that he habitually does use the dictionary when needs arise; one can discover what he can do or cannot do, but not the causes of his success or failure.

But whatever form of evaluation is used, whether it is a standardized test, a test to guide daily instruction, or an observational technique, its benefits are seriously reduced unless the pupils understand its purpose.

SELECTED RESEARCH REFERENCES

1. Burton, Dwight L. "Spelling Can Be Taught to High-School Students." *School Review* 51: 185-87; March 1903.
2. Fitzgerald, James A. "Spelling Words Difficult for Children in Grades II-VI." *Elementary School Journal* 53: 221-28; December 1952.
3. Gates, Arthur L. *A List of Spelling Difficulties in 3879 Words*. New York: Teachers College, Columbia University, 1937. 180 p.
4. Gilbert, Luther C., and Gilbert, Davis W. "The Improvement of Spelling Through Reading." *Journal of Educational Research* 37: 438-65; February 1944.
5. Hanna, Paul R., and Moore, James T. "Spelling—from Spoken Word to Written Symbol." *Elementary School Journal* 53: 329-37; February 1953.
6. Hanna, Paul R., and others. *Phoneme-Grapheme Correspondences as Clues to Spelling Improvement*. U.S. Department of Health, Education, and Welfare, Office of Education, Comparative Research Project No. 1201. Washington, D.C.: Government Printing Office, 1968. 1,715 p.
7. Horn, Ernest. *A Basic Writing Vocabulary*. University of Iowa Monographs in Education, First Series, No. 4. Iowa City: State University of Iowa, 1938. 225 p.
8. Horn, Ernest. "Theories and Spelling." *Elementary School Journal* 57: 424-32; May 1937.
9. Horn, Thomas D. "The Effect of the Corrected Test on Learning To Spell." *Elementary School Journal* 47: 377-85; January 1947.
10. Knell, Dorothy M., and Harris, Chester W. "A Factor Analysis of Spelling Ability." *Journal of Educational Research* 46: 95-111; October 1952.
11. McKee, Paul. "Teaching Spelling by Column and Context Forms." *Journal of Educational Research* 15: 248-55; April 1927.
12. Rindland, Henry D. *A Basic Vocabulary of Elementary School Children*. New York: Macmillan Co., 1945. 650 p.
13. Russell, David H. "Interrelationships of the Language Arts and Personality." *Elementary English* 50: 167-80; March 1953.
14. Russell, David H. "A Second Study of Characteristics of Good and Poor Spellers." *Journal of Educational Psychology* 46: 129-41; 1955.
15. Spache, George. "Spelling Difficulty Correlates I—Factors Probably Causal in Spelling Disability." *Journal of Educational Research* 54: 581-86; April 1941.
16. Thorndike, Edward L., and Lorge, Irving. *The Teacher's Word Book of 30,000 Words*. New York: Teachers College, Columbia University, 1944. 274 p.
17. Varty, Jonathan W. *Manuscript Writing and Spelling Achievement*. Contributions to Education, No. 749. New York: Teachers College, Columbia University, 1958. 65 p.

GENERAL REFERENCES ON TEACHING SPELLING

1. Fitzgerald, James A. *A Basic Life Spelling Vocabulary*. Milwaukee: Bruce Publishing Co., 1951. 161 p.
2. Fitzgerald, James A. *The Teaching of Spelling*. Milwaukee: Bruce Publishing Co., 1951. 233 p.
3. Foran, Thomas G. *The Psychology and Teaching of Spelling*. Washington, D.C.: Catholic Education Press, 1934. 234 p.
4. Hildreth, Gertrude. *Teaching Spelling*. New York: Henry Holt and Co., 1955. 346 p.
5. Horn, Ernest. "Spelling." *Encyclopedia of Educational Research*. Third edition. (Edited by Chester W. Harris.) New York: Macmillan Co., 1960. p. 1337-54.
6. Horn, Thomas D., and Otto, Henry J. *Spelling Instruction: A Curriculum-Wide Approach*. Austin: Bureau of Laboratory School, University of Texas, 1954. 160 p.
7. Hunnicutt, C. W., and Iverson, William J., editors. *Research in the Three R's*. New York: Harper & Brothers, 1958. 446 p.
8. McCarthy, Dorothea. "Language Development in Children." *Manual of Child Psychology*. (Edited by Leonard Carmichael.) New York: John Wiley & Sons, 1954. Chapter 9, p. 492-630.
9. National Conference on Research in English. *Research on Handwriting and Spelling*. (Edited by Thomas Horn.) Champaign, Ill.: National Council of Teachers of English, 1966. 79 p.
10. Petty, Walter T. *Improving Your Spelling Program*. San Francisco: Howard Chandler, 1959. 75 p.
11. Shane, Harold G. *Research Helps in Teaching the Language Arts*. Washington, D.C.: Association for Supervision and Curriculum Development, a department of the National Education Association, 1955. 80 p.

WHAT RESEARCH SAYS SERIES

1. Teaching Reading (Arthur I. Gates)
2. Teaching Arithmetic (Herbert F. Spitzer)
3. Teaching Spelling (Ernest Horn)
4. Teaching Handwriting (Frank N. Freeman)
5. Personality Adjustment of Individual Children (Ralph H. Ojemann)
6. The Learning Process (William Clark Trow)
7. Evaluating and Reporting Pupil Progress (John W. M. Rothney)
8. Guided Study and Homework (Ruth Strang)
9. Teaching High-School Mathematics (Howard F. Fehr)
10. Teaching High-School Science (J. Darrell Barnard)
11. Reading in the High School (Leo C. Fay)
12. Science in the Elementary Schools (Gerald S. Craig)
13. Class Organization for Instruction (J. Wayne Wrightstone)
14. Audiovisual Instruction (Paul R. Wendt)
15. Juvenile Delinquency (William C. Kvaraceus)
16. Parent-Teacher Relationships (Irving W. Stout and Grace Langdon)
17. The Gifted Child in the Elementary School (James J. Gallagher)
18. Teaching Composition (Alvina T. Burrows)
19. Group Processes in Elementary and Secondary Schools (Louis M. Smith)
20. Teaching the Social Studies (Jonathon C. McLendon)
21. Understanding Intergroup Relations (Jean D. Grambs)
22. About the Kindergarten (Elizabeth M. Fuller)
23. Art Education in the Elementary School (Hilda P. Lewis)
24. Mental Health (Robert F. Peck and James V. Mitchell, Jr.)
25. The Educable Mentally Retarded Child in the Elementary School (Herbert Goldstein)
26. Physical Fitness (Paul Hunsicker)
27. Physical Education in the Elementary Schools (Anna S. Espenschade)
28. Creativity (E. Paul Torrance)
29. Listening (Stanford E. Taylor)
30. Anxiety as Related to Thinking and Forgetting (Frederick F. Lighthall)
31. Improving Classroom Testing (Max D. Engelhart)
32. Controlling Classroom Misbehavior (William J. Gnagey)